

December 1968

Brief 68-10436

NASA TECH BRIEF



NASA Tech Briefs are issued to summarize specific innovations derived from the U.S. space program, to encourage their commercial application. Copies are available to the public at 15 cents each from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

Compact Rotating Cup Anemometer

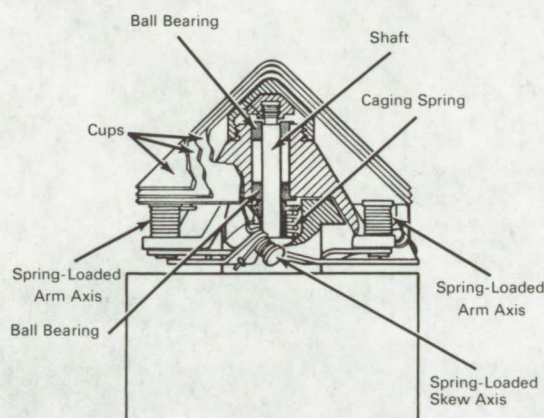


FIGURE 1

This compact, collapsible rotating cup anemometer has been designed for use in remote locations where portability and durability are factors in the choice of equipment. In the closed position, the three anemometer cups nest inside each other and lie over the hub assembly. In the open, or operational, configuration, the cups are positioned 120 degrees apart by the anemometer arms. The combination of interlacing arms and skewed hinge axes permits a large, sensitive anemometer to be stowed in the smallest possible cylindrical volume (1 1/2-inch diameter \times 1-inch high). This lightweight instrument has a low wind-velocity threshold, which is comparable to that of conventional rotating cup anemometers; stores in less than one-tenth the volume of such devices; is capable of withstanding large mechanical shocks while in its stowed configuration; and has fast response to wind fluctuations.

A cross section of the folded anemometer is shown in Figure 1. Upon release, the cups rotate off the

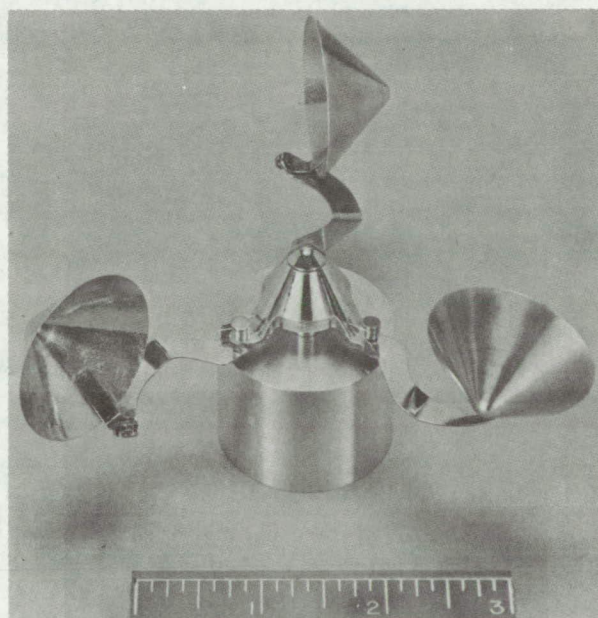


FIGURE 2

hub sequentially on three spring-loaded skew axes. At the same time, the three arms, which are stowed beneath the hub, rotate outwardly 180 degrees about another set of three spring-loaded (arm) axes until the anemometer assumes its operational configuration (Figure 2). In this configuration, the anemometer is free to rotate on its two miniature ball bearings. The rotational speed of the hub is detected photoelectrically from beneath the hub. A lid (not shown) maintains the anemometer in the closed configuration until the instrument must be put into service. A coil (caging) spring keeps the load off the bearings and cages

(continued overleaf)

the mechanism. Upon command, a squib (not shown) is fired to release the cups and permit them to spring open. The caging spring then lifts the hub into position on the shaft, placing the anemometer in operational condition.

Note:

No additional documentation is available. Inquiries may be directed to:

Technology Utilization Officer
NASA Pasadena Office
4800 Oak Grove Drive
Pasadena, California 91103
Reference: B68-10436

Patent status:

No patent action is contemplated by NASA.

Source: J. B. Wellman
Jet Propulsion Laboratory
(NPO-10563)